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| 09/940,729 | 08/28/2001 | Fujihiko Kobayashi | 6340-000021 | 5137 |

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HARNESSE, DICKEY & PIERCE, P.L.C.
P.O. BOX 828
BLOOMFIELD HILLS, MI 48303

EXAMINER

GRAHAM, ANDREW R

ART UNIT PAPER NUMBER

2644

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/940,729

Applicant(s)

KOBAYASHI, FUJIIHIKO

Examiner

Andrew Graham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Objections

1. The amendments made to Claim 1, in view of the previous objection to Claim 6, suffices to overcome the grounds of said objection. Accordingly, said objection is hereby withdrawn.

Response to Arguments

2. Applicant's arguments filed 6/22/05 have been fully considered but they are not persuasive.

On page 4, lines 14-17, the applicant has stated, "The tape, which the Examiner refers to as the "elastic member", does not transmit the sound from the vibration plate to the elastic member as claimed" and "In fact, sound is transmitted from the soundboard directly to the metal disk". The basis of this allegation appears to be the illustration of Figure 9 of Doederlein, which the applicant alleges "illustrates a metal disk in contact with the soundboard 56". Such contact would be necessary for the transmission of sound in the above cited applicant's statement. It is acknowledged that drawings must be evaluated for what they reasonably disclose and suggest to one of ordinary skill in the art. However, it is respectfully submitted that Doederlein's disclosure obviates such a position and yet anticipates the present claim language. The plate in question, 64, is part of the driver 52 along with the ceramic disc 62 (col. 3, lines 58-62). Doederlein teaches that the tape (66) couples the driver (52) to the sound board (56) (col. 4, lines 1-4). The driver (52) vibrates

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with minimal damping and, as it is coupled to the soundboard (56), causes the soundboard (56) to vibrate in unison therewith (col. 4, lines 42-45). The diameter of the aperture (54) in the soundboard (56) for receiving the driver (52) is disclosed as being "nominally equal" to the diameter of the metal plate (64). "Nominally", as defined by Merriam Webster Online Dictionary, means "approximate" or "of, being, or relating to a designated or theoretical size that may vary from the actual". As such, the "nominally equal" diameter as denoted by Doederlein comprises at most a diameter for the aperture (54) that is equal or greater than that of the disc (64), as a diameter of the aperture (54) less than the disc (64) would not enable the disc (64) to be received therein. As such, at least the diameter "greater than" comprised by the phrase "nominally equal" would mean that the disc (64) at most would contact the sound board at a single point around the circumference of the aperture (54), if at all. The potential lack of contact between the disc and soundboard, as comprised in the teachings of Doederlein, prevents sound from being transmitted directly from the disc to the soundboard, as suggested by the applicant's statements cited first above. Doederlein clearly teaches that the tape (66) couples the driver (52) to the soundboard (56), and as coupled, the driver (52) vibrates the soundboard (56) in unison. With the tape (66) being the only form of coupling between the soundboard (56) and driver (52), again, as allowed for by the teachings of Doederlein, the tape is the means by which vibrational force is transferred between the soundboard (56) and driver (52). As

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such, Doederlein is yet considered to anticipate the amended language "an elastic member-supporting the piezo-electric vibration plate on the sound-board for generating a sound from the sound-board transmitted thereto from the piezo-electric vibration plate via the elastic member". Further, it is respectfully submitted that the tape (66) would transfer vibrational force to the soundboard (56) from the driver (52) even if the aperture (54) were equal in diameter to the disc (64), as a result of the rigid coupling provided by the tape (66) (col. 4, lines 1-4).

The remaining remarks on pages 4 and 5 present no additional arguments beyond that which has been addressed in the above response. Accordingly, the rejection of the claims referred to in these sections, Claims 3 and 5-8 have been reviewed and are respectively maintained herein, as is repeated below.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1 and 4** are rejected under 35 U.S.C. 102(b) as being anticipated by Doederlein et al (USPN 5641164). Hereafter, "Doederlein et al" will be referred to as "Doederlein".

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Doederlein discloses a planer speaker device comprising a sound board and a piezoelectric driver.

Specifically regarding **Claim 1**, Doederlein teaches:

A piezo-electric speaker (24, as part of 10; Figure 2; col. 2, lines 47-51; col. 3, lines 7-15 and 40-47) comprising

a piezo-electric member (62) generating a strain according to an electric signal applied thereto (function of piezoceramic, col. 3, lines 58-60),

a piezo-electric vibration plate (64) coupled with and suspending said piezo-electric member (62) and converting the strain to the acoustic vibration (function of metal disc, col. 3, lines 58-60 and 66-67; col. 4, lines 1-7); and

a sound-board (56) resonating to the acoustic vibration (col. 3, lines 62-67; col. 4, lines 1-2 and 43-46),

said piezo-electric member (62) having an area (illustrated by width, Figure 9) smaller than said piezo-electric vibration plate (64) so that said piezo-electric member (62) is spaced from and out of contact with said sound board (56) (Figure 9)

an elastic member (66, "flexible") supporting the piezo-electric vibration plate (64) on the sound-board (56) for generating a sound from the sound-board (56) transmitted thereto from the piezo-electric vibration plate (64) via the elastic member (66) (tape causes minimal damping, while rigidly coupling 56 to 52; col. 4, lines 1-4 and 43-58; coupling causes vibrating of soundboard 56 in unison with driver 52).

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the acoustic vibration caused by the piezo-electric vibration plate being propagated from the sound-board to the ambient air to generate a sound ("rigidly coupled", col. 4, lines 43-58).

Regarding **Claim 4**, Doederlein teaches:

wherein the elastic member (66) supports the piezo-electric vibration plate (64) at the periphery thereof (Figure 9).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. **Claims 3 and 5-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Doederlein as applied above, and in further view of Yamada (USPN 3721840).

As detailed above, Doederlein discloses a planer speaker device comprising a sound board and a piezoelectric driver. AS is generally shown in Figure 9, the transducer element (52) of Doederlein is supported within a gap or opening of a surrounding structure (56). The securing component of this support is tape (66) which is adhered to both piezoceramic element (62) and metal plate (64).

Regarding Claim 3, Doederlein does not clearly specify:

the elastic member is adhered to the whole surface of the piezo-electric vibration plate.

Yamada discloses a sound generator that comprises a piezo electric element supported within an opening in a support structure. Parallel to the structure of Doederlein, the generator of Yamada

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comprises a piezoelectric member (1), a wider plate (3), and an elastic or vibratory member (4) (col. 1, lines 42-48; Figure 1).

Specifically regarding **Claim 3**, Yamada teaches:

the elastic member (4) is adhered to the whole surface of the piezo-electric vibration plate (3) (col. 1, lines 40-48; Figures 1 and 4).

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to implement the piezoceramic element of Doederlein on the side of the plate opposite the vibratory element, as is disclosed in the teachings of Yamada. The motivation behind such a modification would have been that such an arrangement would have provided an additional layer of physical protection for the piezoceramic component of Doederlein, shielding the component from externally introduced pressures, such as from fingertips. It is particularly noted that Doederlein teaches that a piezoceramic may be placed on the other side of the metal plate (col. 4, lines 4-7).

Regarding **Claim 5**, Doederlein in view of Yamada teach:

a vibration transmitting member (4 of Yamada) having a vibration propagating velocity higher than that of the sound-board (56 of Doederlein) for supporting the periphery of the piezo-electric vibration plate (4 supports edges of electrode 3, Figure 2 of Yamada; col. 2, lines 10-14) (the plate 4 of Yamada has higher sound propagation than sound board of Doederlein because the plate, made of a synthetic resin such as polyethylene terephthalate (col. 1, lines 51-53; col. 2, lines 1-4), is more dense than the sound board of

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Doederlein, which is made of a resin foam (col. 3, lines 62-65). The propagation of sound in a medium varies in a manner proportionate with the density of the transmission medium. The use of the type of plate of Yamada for securing the member of Doederlein would have been the enabled thickness selection for maximizing the transducing efficiency, at least over the area of the affixed piezoelectric driver).

the vibration transmitting member (4) being mounted in an aperture formed in the sound-board (located in opening of support 5, analogous to opening of sound board of Doederlein; col. 1, lines 48-51).

Regarding **Claim 6**, Yamada particularly teaches:

a vibration transmitting member (4) having a vibration propagating velocity higher than that of the sound-board (56 of Doederlein) for supporting the periphery of the elastic member (8 or 9) (at least the edge of 8 or 9 is supported by 4; col. 2, lines 29-36; please see rejection of Claim 5 above regarding the limitation of vibration propagation);

the vibration transmitting member (4) being mounted in an aperture formed in the sound-board (located in opening of support 5, analogous to opening of sound board of Doederlein; col. 1, lines 48-51).

Regarding **Claim 7**, Yamada particularly teaches:

the vibration transmitting member is a circle-annular vibration ring (4, embodiment of Figure 2, with opening 7) (col. 2, lines 10-28)

Regarding **Claim 8**, Yamada particularly teaches:

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the vibration transmitting member (4, embodiment of Figures 1,4) is a plate-shaped vibration board (col. 1, lines 46-51)

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Graham whose telephone number is 571-272-7517. The examiner can normally be reached on Monday-Friday, 8:30 AM to 5:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ag

Andrew Graham
Examiner
A.U. 2644

ag
September 1, 2005


VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600